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"Science is a first-rate piece of furniture for a man's upper chamber if he has common sense on the ground floor, but if a man hasn't got plenty of good common sense, the more science he has, the worse for his patient."—Holmes.

Love may not make the world go round, but it makes the young man's arm go around waste places.

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Editors' Office, 236 Wellington Ave.. S. E., Grand Rapids, Mich.

VOL. VIII NOVEMBER No. 11

EDITORIAL

"FOR THE GOOD OF THE SOCIETY."

We published in the August number of the "REVIEW," an article written by "A Delegate," that criticized, to a considerable degree, the methods and routine of the Supreme Society's elections. In this issue is an answer to that by one of our most able Past-Presidents, Oscar E. Servis, of Chicago.

The Editor has received several letters and some personal comment, by members from various parts of the country, criticizing the article and, incidentally, the Editor. Others have written and commented from the standpoint of commendation. One of the questions most asked was, why did the "REVIEW" print the article?

Any person present at a Convention of our Supreme Society, is aware that there are only a comparatively few of the delegates that will try and take an active part in the work of the Convention. All, however, can and do talk among themselves; giving more than ordinary opportunity for the starting of rumors, and of forming more or less false impressions of the real conditions within the Society as a whole. Many go away with impressions similar to those embodied in the article of "A Delegate."

The article was printed for two reasons, viz., first, because every member of our Society should have the right to a hearing; second, because of the facts mentioned in the preceding paragraph. The answer is printed for exactly the same reasons. However, nothing more will be printed in regard to this particular matter. We consider the question closed.

"For the good of the Society" we can only arrive at one conclusion, that the Branch Society is largely at fault; they should send a strictly hand-picked delegation every year. They should not leave the honor of representation in the Supreme Society to a man for the reason that he is a good fellow; that he is an old member; that he has done good work in the Branch, or any other similar reason. Elect as the delegate or delegates, men that are all of those things, and also, THAT CAN TAKE THE FLOOR AND WORK AND FIGHT FOR WHAT THEIR RESPECTIVE BRANCHES WANT.

Now for a few facts: Every member of the Executive Committee, at least for the past few years, has been a man who would use all his ability to WORK, EVERY WAY THAT HE COULD, for the benefit of the Society at large. EVERY ONE OF THEM HAVE SACRIFICED PART, IF NOT ALL THEIR PERSONAL PLEASURES AND RECREATIONS TO THE WORK OF THE SOCIETY; there has not been one shirker or lazy one among them all.

We feel obliged to mention one more of the Branch Society's faults in regard to their delegates: they should never fail to assume at least a part of the expense incurred by the delegate in his attendance at the Convention. Many very able men cannot afford to assume the whole expense. All Branches represented by the very best men; that's the whole answer. With our policy of an open forum, the above mentioned policy, if adopted by all of the Branches, would prevent the wrong impressions being formed, and, therefore, would be for the best "Good of the Society."

THE SUPREME ELECTIONS

An Answer to "The Indianapolis Convention and Others"

By Oscar E. Servis.

The article of "A Delegate," in the September issue of THE MONTHLY REVIEW, has been read with considerable regret, particularly since it implies something that is not true, and besides will tend to create factions in the Society, hence the reason for taking cognizance of it and making reply with a view to correct any wrong impression that may have been created among our membership.

It is to be regretted that the members of the A. E. S. have been so deceived according to "A Delegate" by the men who have served the Society in the past, and that men of merit had not been chosen to guide the destinies of the Society. However, it might be noted that during the various administrations the A. E. S. has grown and prospered. We might assume, then, that this is simply a coincidence and not in any way due to their efforts, efficiency, or ability.

The entire article is based upon idle gossip, and not on facts. "A Delegate" should be made to furnish definite and concrete proof of the statements he makes regarding the election of officers at Philadelphia, Rochester, and Indianapolis. This should be in writing and signed by the proper parties. If unable to furnish such proof, "A Delegate" should be requested to write under his own name, admitting that he cannot support his accusation and that he wishes to go on record and correct any wrong impression that his article in the September REVIEW may have created.

"A Delegate" should also be requested to show who aspired to or was worthy to be rewarded or honored by a Supreme office that did not get any consideration at any of these Conventions. The Society would be departing from the paths of propriety if it were to nominate and elect men who, while good fellows and capable of filling any office, have not rendered any service or had not taken sufficient interest in the welfare of the Society to merit such reward.

The office has always sought the man, and while there have been caucuses, they have always been with the idea of selecting the man or men most entitled to consideration, based on services rendered, also after ascertaining the opinion of a majority of delegates present.

Any man who expects to be honored must stand out among his fellows by his activity in the Society. This is indicated usually by the service rendered his Branch. It is also observed by the Supreme Society through the officers who have a correct guage on the officers of the Branch Societies by the manner in which they attend to the business of the Branch. If members do not aspire to serve their Branch, how can they hope to be honored by the Supreme Society at its conventions? Why did not "A Delegate," who has such ability to criticize, request the floor at the Indianapolis Convention and then and there make his accusations? This, in the writer's mind, would constitute a display of fairness on his part. Did he champion any of his "men of merit," by nominating them? There was ample opportunity for him to do so. Why did he not challenge the nominations and meet in debate the coterie of self-perpetuating officials who might have enlightened him on the subject of the best interests of the Society?

HYDROFLUORIC ACID IN NICKEL SOLUTIONS

VARIOUS CONDITIONS NOTED DURING THE PRACTICAL OPERATION OF SINGLE SALT SOLUTIONS CONTAINING HYDROFLUORIC ACID DURING A NINE-MONTH PERIOD.

By Elmer Woodmansee, Detroit.

Volume of solution, 1,000 gallons. Conveyor tank, U. S. Galvanizing Co., 20 feet long, 30 inches deep, 48 inches inside measurement. Distance from anode to cathode, 5½ inches. 55 hooks for carrying the work. 130 hex or rather "Economy" anodes, tapering from both ends to center. 90 to 92% metal. Nickel solution made as follows:

Nickel sulphate dissolved until hydrometer stood 15° Baumé in two-thirds volume of water; Boric acid, 4,000 oz., dissolved in boling water, added; 1,000 oz. 48 to 52% commercial hydrofluoric acid added; solution electrollized for 8 hours on cast iron plates that are used to weight the American Beauty iron top not even pickled or scratch brushed. One hundred pieces used, perhaps, 25 square feet surface. Voltage, 6; amperes, 200.

At the end of 8 hours 4 tops, polished, were placed in with these and plated 30 minutes. Deposit very heavy, with a matt surface, but solution did not throw in center, deposit very thin

there. This was repeated the next day several times with the same result. Addition of 1,000 oz. sal ammoniac to increase conductivity; solution thoroughly stirred, allowed to settle over night. Previous conditions as to number of pieces, amperes, voltage, etc., were repeated and violent pitting was observed upon the polished pieces extending clear to the base metal. Repeated trials that day produced the same results.

I might say here that the solution was heated to 100 degrees each day during the tests which practically eliminates the temperature problem.

Repeated trials again failing, the acidity of the solution was gradually reduced by additions of Magnesium Carbonate, and tests made after each addition until the solution was just above neutral. Pitting decreased but was not eliminated after many trials. Nickel sulphate was added gradually; tests again made with each addition, until the solution stood 21° Baumé, but still the pitting continued. 1,000 oz. sodium sulphate was added, and after thoroughly stirring, allowed to stand over night, after electrollizing for 2 hours. Tests made the first thing in the morning showed a very heavy beautiful deposit with absolutely no sign of pitting during these tests.

Two hundred and twenty of these polished tops were now plated with a voltage of 3¾, 700 amperes, with the same results. Perhaps 50,000 pieces, stands and stops were plated without any trouble being noted. When an entirely different style of what might be termed pitting developed, in the center of each pit a small black speck was noted, which appeared to be either iron or carbon, but which could be scratched off with the blade of a knife, leaving the surface beneath covered with a more or less heavy deposit of nickel, dark and off-color.

I am frank to admit that I was in the air for a few moments. Thinking it over, it was reasoned out thus: While the solution was still acid to litmus, the acidity could not be high enough to cause it, and the character of the plate being entirely different, was it not due to near-alkalinity, and would not H. F.* restore it? About 1 gallon of H. F. was added, thoroughly stirred; the next morning the first run came out with pitting almost eliminated, and it worked out entirely during the day. No further trouble has been experienced, and the solution is in continuous operation 8 hours per day.

All metal is added in the form of Chloride. Nickel Sulphate being ppt. with Calcium Chloride, forming Calcium Sulphate, which is almost insoluble, and the ppt. washed

* H. F.="Woodmansee" for hydrofluoric acid.

several times, and the washings added to the nickel solution.

Small amounts of H. F. are added every two weeks; almost no sludge is in the bottom of the tank, the anodes remaining very clean, yet seeming to dissolve readily. Three hundred lbs. of Nickel Sulphate, in the shape of Nickel Chloride, has been added during that time, which, in my opinion, just about takes care of the drip, which is, in any solutitn, considerable as Prof. Lukens stated last night.

The disadvantages of the solution as noted by the writer are: the deposit is slightly harder to buff, and requires more volts to force the same amount of amperes.

The advantages of the rapid deposit and the fact that practically no sludge is formed, in the writer's opinion, more than offset these or any others.

I am also of the opinion that any plater who will give the same study to this solution, bearing in mind that he did not gain his knowledge over night, can successfully operate this solution with no more trouble than any other

There is no doubt in my mind that Ed. Lovering has discovered something, and while, as Dad Liscomb said, he should have made no attempt to make a bum of Mike Faraday, he should be praised instead of censured, for he made them sit up and take notice, and the writer is among that number.

These observations were noted with the best efforts made to keep uniform practical conditions, and in no manner intended to be dogmatic statements, nor is the claim made that my opinions are gospel.

In conclusion: Let's all get together; stick to our knitting; forget politics in the organization, and make the A. E. S. what it should be: the greatest Society in the world!

"SPOTTING-OUT" AND REMEDIES

Written for the 1921 A. E. S. Convention by E. S. Thompson

The well-known trouble of brown spots appearing on finished metal work was encountered in full force in the last two months in a large fixture plant, where the author of this paper has charge. I do not know what per cent of the work done by my predecessor spotted out. I do know, however, that the first month's production under my supervision was fully 80% bad, and that having a lead-antimony alloy as a base, was exactly 100% bad. The finishes are: Statuary Bronze, Bank Bronze, so-called Oxidized Copper, Brushed Brass, Antique Brass, and Verde Antique, with occasional

special finishes. As the chief trouble was experienced on the castings made of lead and antimony, we will take up the treatment of those, and when we have finished, we will see that the spots, whether on cast iron, cast brass and all other porous bases, arise from the same cause and may be cured by the same methods.

It has been said, and I have verified the truth of it, that spotting-out may be caused by the occlusion of sodium in the deposit, which, of course, is converted into sodium hydroxide. When any moisture or any agent comes in contact with this compound upon the surface of any alloy containing copper, oxidization follows. If it is upon zinc, lead or tin, the same reaction takes place, but the salt formed is white, where, in the case of the copper alloy, the stain is brown. This is due, wholly, to a condition of the depositing solution and the spots are not confined to a zone around the pores, but will occur where the base metal is sound and homogeneous. The spots occurring from this cause are easily remedied by the plater, and will not be treated here. It is those spots which persist in breaking out around a small cavity which cause the plater to dream bad dreams and break the Commandments.

We will consider the primary causes of spotting-out. Nearly all writers assert that the spotting-out is due to the entrance of the plating solution into the pores. Cyanide and various agents have been suggested and advocated as a cure-all. I will not say that they are *all* impossible. There may be certain bases which, when treated by phosphoric acid, as Mr. Proctor has suggested, will react with sodium salts to form sodium phosphate, which does not materially affect the deposit. This might be used on cast iron with satisfactory results; but no great benefit would be derived on account of the time necessary for the reaction to take place.

As we proceed with this paper, it will be seen, without any further comment, just why the immersion of the plated article in a solution which will counteract the plating solution has no value. I cannot take the time, even if I had the ability, to go into the reaction of every remedy suggested in connection with all the solutions in the plating-room. I shall confine this paper to my own particular case, and I believe it will answer for all.

Now as the castings (lead-antimony) come to the plater, they are dry. The cavities formed by the liberation of gases by oxidation or reaction of the metals in the alloy, and in this case, with the bronze mold, are filled with those gases or with air. (Now, right here I am going to say that sodium salts,

such as carbonates, hydroxides, cyanides, or in fact, any of the alkaline salts of sodium are not the sole cause of spotting-out.)

In the treatment of these castings, I shall show how, step by step, one agent after another was eliminated as the sole cause of the trouble. We cleaned them in a proprietary cleaning compound. We struck them up in a double salts nickel solution, obtaining the deposit of copper from the acid copper bath, allowing the deposit to proceed under one and two-tenths volts pressure for about one and one-half hours. As the solution was a standard acid copper, it will be seen that the deposit was reasonably heavy. After the deposit was obtained, the pieces were rinsed in cold water, brushed with water and sand and stained in polyshlphide, dried and brushed. They were then lacquered in pyroxilene lacquer of a standard quality. The spots were very numerous within a few hours.

Having in mind the long-cherished belief, inspired by different writers on the subject, that alkaline salts, especially the cyanides, were responsible for the spots, we prepared some castings by sand buffing, and washing in clear water preparatory to plating, carrying out the finishing process as before. To our surprise, the spots were just as numerous as when cleaned in the alkali.

We then decided that there *might* be some alkali in the cavities by the decomposition of the double sulphate of nickel and ammonium,the NH_4 forming, with water, the ammonnium hydroxide. To either prove or disprove this theory, we made up a small solution of nickel sulphate with a little hydrochloric acid added, striking the castings with nickel in this solution, proceeding afterwards as before. The spots were still very much in evidence. These tests eliminated the alkali from the field of our investigations except to clean a few pieces in alkali, strike some of them in nickel, plating them in cyanide copper, while some of them were plated direct in the cyanide copper solution. The spotting-out in both cases was about the same as in the first tests.

Now, as we had been told that $H_2\ SO_4$ did not injure the deposited metal when traces of the acid were left upon the surface and lacquered, we decided to find whether this was true. Consequently we lightly sprayed H_2SO_4 upon the surface by means of an ordinary atomizer, allowed it to dry and lacquered the piece. No change in color was noted. We then thought that there might be a reaction between the exposed base, the deposited copper, and the lacquer. Some holes were

cut thru a deposit of bank bronze where the casting was sound, and lacquered. There was no change in the color of the metal of the base or the deposit even after it had lain for several days. This led us to a more thorough study of the phenomenon; we sprinklered Cu SO_4 solution upon the work, taking care that the droplets were very minute. This caused spotting-out before it was lacquered.

We reasoned, then, that if Cu SO_4 upon the surface would cause the spots, it certainly would cause spots around the cavities in the metal by working up under the lacquer. This is only school-boy philosophy, of course; but since we had eliminated any complicated solutions from our investigations, the simple things must be considered.

Now, how did that Cu SO_4 solution get into the pores? There are two answers, both of which are no doubt correct. One is, by capillary attraction, the other is by diffusion. If the walls of the cavities were dry when placed in the solution, the entrance of the solution to those cavities was gained by capillary attraction. If the cavities were filled with water, then the entrance was by diffusion, or, more properly, osmosis.

We all know that when a heavy solution is in the bottom of a tank and water is gently poured upon the surface so that there is no agitation and the solution let stand for a time, the heavy solution will migrate upward until there are an equal number of molecules in each cubic centimeter of the top and bottom portions of the solution. This is called osmosis, and is an old principle discovered centuries ago.

Now, we reasoned, if osmosis would cause the cavities to *fill* with heavy solution when such cavities were already filled with water or some other light solution, the same principle could be applied in removing the solution from the cavities. Consequently, we allowed plated castings to remain in running cold water for forty-eight hours, after which they were finished, water alone being the washing and drying agent. They were then thoroughly dried out on a steam coil and lacquered. Ten days afterward they were examined and found to be free from spots. We then hastened the removal of the plating solutions from the pores by means of boiling water. This method requires about twelve hours for reliable work, especially if the deposit is extra heavy, since the deposit partially closes the narrow entrance to these cavities after the solution has entered, rendering the removal of the enclosed solution more difficult.

As stated before, this is no new principle. I have discov-

ered nothing new nor applied anything old in a new way. It is merely taking more time in rinsing than is ordinarily practiced. Mr. Proctor's method of immersing in first hot and then cold water is merely the application of this principle. But I do not doubt that his method would shorten somewhat the time required for the removal of the solution from the pores. And when the solution is all removed, water only remains, which is vaporized by a little heat. If any moisture remains and comes in contact with the lacquer, a white precipitate of cotton is observed instead of the brown spots.

Now, as to adding acids to water and immersing the castings in them: This method is not effective, one reason being that if a heavy acid is used, the density of the solution in the pores and the density of the acid are so nearly the same, that there is no interchange—there is no diffusion of the solution thru the acid. If acid is used to neutralize the sodium salts, which it is supposed to do, there will be formed across the opening a film which prevents any further action and the remainder of the solution in the cavities remains sealed up until the lacquer or perhaps the brushing operation removes it and it is just as effective as ever in causing spots.

We have reduced our spotting-out to almost nothing by striking in nickel, plating in acid copper, boiling in clean water for about twelve hours, and thoroughly drying over a steam coil before lacquering. But I wish to say that for reliable results the water must be kept in actual ebullition and a constant stream of clean water running into the boiling tank.

REPORT OF RESEARCH COMMITTEE, CALLED TO WASHINGTON TO MEET WITH DR. WILLIAM BLUM AND STAFF OF THE BUREAU OF STANDARDS

The Research Committee reported to Dr. William Blum at the U. S. Bureau of Standards, Washington, D. C., October 28th and 29th, 1921. Mr. George Hogaboom, advisor to the Bureau upon plating problems, and the Staff of chemists, who work under the direction of Dr. Blum, were also present.

Dr. Blum opened the conference by an address in which he stated that the objects of the conference was to go over the program as outlined by the Bureau as regards the different problems in connection with Research work on Nickel-plating. He stated that Nickel Research had been decided upon, because of the fact that more than 50% of all the metal deposited was of this metal, and therefore more platers and manu-

facturers would benefit. Later the other different metals would be taken up.

The discussions were carried on in the Laboratory, where the Committee were shown the apparatus used in connection with the problems, and we were asked to make suggestions that would be of value to the Staff.

Dr. S. W. Stratton, Director of the Bureau, and Dr. Hillebrand, Chief of the chemical division, sat with the Committee and took part in the discussions; they promised good results from the information gained from this conference, and wished to thank the members of the Committee for being able to be present. Only one thing of importance to report is the test of Nickel solutions, worked out by Mr. Thompson. This test enables the plater to keep his solution constant as to the acid condition and be assured of perfect deposits. As the work is only begun, another meeting will be called some time next spring, March or April, at which time the results of this research work will be reported.

Respectfully submitted,

S. E. HEDDEN,
WILLIAM DELAGE,
JOSEPH HAAS,
Research Committee.

WHAT THE BRANCHES ARE DOING

BOSTON

Boston Branch met Tuesday evening, October 27, with Past-President Mackie in the chair, the President not being able to attend. The regular order of business was gone over, and a motion was made, owing to so many of our members attending school, to change our meeting-night again, so that all the members could attend, consequently Boston Branch will meet the first and third Friday of each month, instead of the second and fourth Thursday. Mr. Herrick told of his trip to Bridgeport, Conn., and visiting the Branch there; being called upon to speak, gave the members a talk on the nickel solution, and Bridgeport Branch thanked him for his talk. Discussions took place after the reports, which lasted until the meeting adjourned at 10:30 p. m.

BOSTON

Boston Branch met Friday, November 4th, at Wells Memorial Building, with President Nihan in the chair. After the routine business had been disposed of, the Branch voted to send a committee of three to attend the Providence-Attleboro Branch banquet December 10.

Past-President Mackie gave the first of a series of fall and winter talks that it is hoped will increase the attendance to a considerable degree.

His talks are both interesting and instructive, and the member

who is not present to take advantage of these talks, will eventually find that he is the only person that will lose anything.

This first talk was on nickel solutions, and will be continued at the next meeting.

MILWAUKEE

Milwaukee Branch will hold two meetings each month, at least during the winter months. They will be held on the second and fourth Thusdays of the month, instead of only the first Friday.

The second Thursday will be devoted to the regular monthly business meeting, while the fourth Thursday will be entirely taken up by educational work and the problems found in our Question-Box.

MILWAUKEE QUESTION-BOX

Question No. 1—Why is there a greater evolution of gas in running a potassium cyanide copper solution, than an acid copper solution, the same current being used?

Answer No. 1—It is due to the difference of potential of the baths. Copper has a potential in the sulphate bath of −0.51, in the cyanide bath of +0.81, the difference being the sum of these two potentials, which is 1.32.

Question No. 2—What was the cause of spots and stains on nickel-plated steel, the conditions being as follows: the work was struck in a cyanide copper solution, clean and uniform color being secured; then plated in a new nickel solution made as follows:

Water	1 gal.
Single Nickel Salts	8 oz.
Double Nickel Salts	8 oz.
Boracic Acid	2 oz.
Salt	2 oz.

Work was not buffed, and should have been uniform in color?

Answer No. 2—The solution was too acid, due to excess of acid in the single nickel salt. Carbonate of nickel should be added to neutralize the bath; then boracic acid until the work has a uniform color.

Question No. 3—What is the cause of the porcelain on faucet-handles cracking and breaking during the process of nickel-plating; porcelain is cemented on brass shank before plating?

Answer No. 3—It is caused by the expansion and contraction caused by going from cold to hot solutions and vice versa. The articles should not be allowed to get too hot at any time.

Question No. 4—What may be the cause of copper depositing on a lead-lined acid copper tank?

Answer No. 4—The tank is very probably charged due to poor insulation of the anode and cathode rods.

Question No.5 —What can be used instead of glue to cement cloth or metal upon metal?

Answer No. 5—Use sodium silicate, cold.

MILWAUKEE

The regular first meeting of the Milwaukee Branch was held on October 13th, at our new hall, 321—3rd St., President H. E. Armour

presiding. This meeting was devoted to regular business, only 19 members being present. Milwaukee will have two meetings a month, the second Thursday being a business meeting only, and the fourth Thursday of each month will be devoted to Question-Box and discussion. Two applications were received.

Mr. Hoyt of the New York Branch, and Mr. Henry of the Chicago Branch, were with us.

Mr. Thorstensen of Armour-Thorstensen, analytical chemists, gave a very interesting talk on the question of starting a new class in chemistry.

BRIDGEPORT

Our October 21, meeting was held in the Laboratory, with 17 members present, President J. W. Slattery in the chair. The minutes of the previous meeting were read and accepted.

Mr. Slattery told of attending a meeting of the American Chemical Society at the Seaside Club, where Dr. Givvers gave a talk on lacquers. Mr. Slattery met Mr. Burt, a chemist, who was interested in the A. E. S., and suggested forming a class in chemistry for the Bridgeport Branch.

We had as a visitor Mr. Herrick who extended to us the greetings of the Boston Branch. He gave us an interesting talk on doings of the Boston and Providence-Attleboro Branches. Mr. Herrick told of the success the Boston Branch had with their chemistry class, and the work they were doing in analyzing and testing solutions, and anodes. Mr. Herrick also spoke on the use of Hydrofluoric Acid and the methods of adding it in nickel solution.

A vote of thanks was extended Mr. Herrick at the conclusion of his talk.

A discussion on nickel anodes followed, and the meeting adjourned at 10 P. M.

Pictures of the Bridgeport Branch Outing are on sale. Anyone wishing a picture can write to the Secretary for it.

NEWARK

The regular meeting of the Newark Branch, A. E. S., was held on September 16. Roll-call of officers showed all present, with the exception of President Sievering.

Under the head of reading of papers and discussions, sodium fluoride nickel solutions was the subject. Mr. Sizelove exhibited samples of work done in this solution, which were very good. This subject is creating considerable interest among the members, and we expect to hear the result of their experimenting in the near future.

At the meeting of October 7th, roll-call showed all officers present, and a very good attendance.

The committee appointed to secure a suitable meeting-place, reported that they had secured a room at No. 22 Central Ave. It was voted that this room be accepted, so hereafter our meetings will be conducted at the above address.

Under the head of reading of papers and discussions, a splendid paper on "Electricity" by Mr. Royal F. Clark was read by the author, and discussed at length.

How much boracic acid can be taken up in water without crystalization was tested out by Mr. Sizelove, who exhibited samples in test tubes. One had 5 oz. boracic acid per gallon of water, and did not show any trace of crystalization; one had 10 oz. boracic acid per gallon, which showed slight indications of crystalization; and one which had 10 oz. boracic acid and 32 oz. single nickel salt per gallon, without showing any trace of crystalization.

Mr. Faint said he was using a nickel solution made up as follows:

Single nickel salt	37½ oz.
Sodium fluoride	1 1/10 oz.
Water	1 gallon

He said he was getting very fine work, but did not find that it was depositing any faster than the ordinary solution.

President Sievering gave a very interesting talk about his recent trip through the Middle West and factories he had visited, and of methods of rapid production in these plants. Of particular interest were the plants of the National Cash Register Co., of Dayton, Ohio; and the Felt & Tarrant plant, Chicago, Ill. He also told of his trip to the convention of the American Electro-Chemical Society, at Lake Placid, N. Y.

PHILADELPHIA

The November meeting of Philadelphia Branch was held on Friday evening, Nov. 4th, with a good attendance, President G. Gehling presiding.

The Banquet Committee reported that all indications point to a very successful affair on November 19th.

The topic for discussion was "Spotting-out of Nickel- and Silver-plated Pepper and Salt Tops," which finally developed into a discussion of spotting-out of all kinds.

Cream of Tartar solution and the Contraction and Expansion Method was suggested as the remedy for this trouble.

CLEVELAND

The Cleveland Branch held its October meeting at the Hotel Winton. All future meetings of the Branch will be held on the last Saturday of each month at this Hotel.

The meeting was fairly well attended, and after routine matters were disposed of, Mr. Graham gave us some instructive data concerning boiler capacity and the amount of steam required to heat a given quantity of solution or water to the necessary temperature desired within a specified time. His remarks applied exclusively to plating-room requirements and was attentively listened to, and judging from the questions asked the speaker and the discussions aroused, the boys certainly learned a few wrinkles they didn't know of before. Mr. Graham promises us a paper on the subject in the near future.

The matter of a smoker to be held by the Branch will be a leading topic to be threshed out at our November meeting.

ST. LOUIS

At the October meeting, after the regular order of business had been disposed of, our Librarian started us in on the subject of the evening: "Plating Tanks, Hooks and Racks." The various methods of tank construction were presented and discussed, and then followed an exhibit of hooks and racks. Some of these were quite novel, and each had advantages for its special work. J. H. Jordan, E. J. Musick, H. H. Williams, and J. H. Hartman each contributed to exhibit and program.

ST. LOUIS

At our November meeting, which was well-attended, the application of one new member was presented, and a motion prevailed to have our annual banquet in January, to which the ladies are to be invited.

The subject for the evening was: "Electrical Equipment."

H. J. Richards covered the subject in a general way; then in his diplomatic way, side-stepped, but it was for the purpose of introducing Dr. Chandeysson, who handled the subject of low-voltage dynamos in a very interesting and practical manner by aid of a blackboard.

A rising vote of thanks was given Dr. Chandeysson, and it was considered one of the best evenings we have had. The few members that were absent, missed a treat.

CINCINNATI

The Cincinnati Branch had a very good attendance on Friday evening, October 21, and now we have opened our Class in Chemistry at the East Side High School, and everybody is very busy and interested. We also resumed meeting twice a month, namely every first and third Friday of each month. Our Class is held on every Monday and Wednesday night in Room 476 of the East Side High School, and we welcome all visitors. Come in any time you are around.

The meeting on Friday evening was very good, which consisted mainly of talks on Sodium Fluoride for Nickel, but no decision was reached. On some later date we will give you something more definite.

CINCINNATI IN 1922!!

CINCINNATI

The Cincinnati Branch A. E. S., held its last meeting in the A. E. S. Laboratory, with a very good attendance. Much talk on the coming Convention was indulged in, and every one is dutybound to do their best, for the best is none too good for all. Roll call showed all officers present. Routine business was disposed of. The different chairmen reported everything going nicely. One thing must be understood, namely, that the A. E. S. stands for education, and a lot of pep is put behind this chairman; he is full of pep, too.

CINCINNATI IN 1922!!

ROCHESTER

Rochester Branch has been holding some very interesting meetings lately, although they have not been any too well attended. The discussions on solutions, metals, chemicals, tanks, barrels and instruments

have been many and of the finest. The Entertainment Committee, with Mr. Albert Doering at its head, has started the ball going. The Committee is looking for a hall where the Branch may hold smokers, dances and all sorts of entertainment. Pas Supreme President S. P. Gartland has been elected President, and Mr. Albert Doering has been elected Vice-President, to fill the unexpired terms of Mr. E. Troxler and Mr. J. A. Michels respectively, who have both left the city.

Rochester Branch extends to every member of the A. E. S., their friends, best wishes for a very Merry Christmas and a Prosperous New Year.

NEW YORK

The regular meeting of the New York Branch was held on October 14, at the Broadway Central Hotel. President J. A. Stremel presided. This meeting was mostly devoted to regular business and was well attended.

Our last meeting, October 28th, was held with 29 members and all officers present. Our Publicity Committee arranged a theater party and supper which was carried out and gave all the boys a fine time.

The problems indulged in were Tin-plating, Bronze on brass, Production of French Bronze with the use of lacquers and enamels, Silver-plating.

New York Branch will have an open meeting on December 9.

MONTREAL

Office of the Secretary
48 Craig Street, West

Mr. Walter J. Allen, Nov. 14, 1921, Montreal, Canada.
236 Wellington Ave., SE.,
Grand Rapids, Mich.

Dear Sir:—You may print in the MONTHLY REVIEW that the Montreal Branch is now practically in full standing of 18 members so far and expecting more members in a near future. We are holding our meetings at Mr. John H. Feela's laborartory, 411 Aylmer Street, every last Wednesday of the month. Besides, we are attending the Montreal Technical School every Friday night. We have a special professor of Chemistry for our course and we are going fine, and we are proud to state that yet. Some of the local newspapers are describing us, as a good example to boost the school for other trades as well. We are serious. Since **old bucks** as Mr. J. T. Madden and I, the writer, gone over the **sixties**, and are attending the school, ought to be enough to encourage and brace up the youngsters, to stick to the School and to the Society—make good.—Yes, sir, the Society in its **ensemble** is a very good thing for every one of us. And we regret in not having joined it very long ago. However, it is never too late, and with the help of Jim Salmon, which we have very often with us, and the good help of J. A. Blacoll and A. Picton, formerly of the Toronto Branch, we expect to pick up with all our might what we should have done years ago.

Yours truly,
A. GEROUX, Sec.-Treas.

GRAND RAPIDS

The regular monthly meeting was held November 9th, President Whalley presiding, with a good attendance. After the regular business had been disposed of, the chair was turned over to Librarian Poe.

GRAND RAPIDS QUESTION-BOX

Question 1a. What is the cause of a green deposit on the corners of a piece of work that has been nickel-plated?

Answer 1a. Plating too rapidly in a solution that is low in either ammonium chloride or boracic acid.

Question 1b. What is the green deposit?

Answer 1b. Nickel hydroxide.

Question 2. A brass solution works with a beautiful color one week; later, without doing any more work, it gives a deposit that is poor color, with a brown scum. Why?

Answer 2. In standing, the solution has become low in cyanide, and more must be added to bring the solution back to the proper state.

Question 3. Is it practical to maintain a brass solution when only a small amount of work is plated at infrequent intervals?

Answer 3. It is not practical.

CONNECTICUT VALLEY

The Connecticut Valley Branch A. E. S. met on Wednesday, Nov. 9th at the Y. M. C. A., corner Ford and Pearl Streets, Mr. James A. Bagshaw presiding. After the regular business was finished, President Bagshaw introduced Dr. Given, who gave us a very interesting and instructive talk on the use of Lacquer and how it is made. At the conclusion of his talk the meeting was open for questions by all present, of which full advantage was taken. Before the meeting adjourned, a vote of thanks was given Dr. Given.

The next meeting will be held on Dec. 14th, at the Y. M. C. A.

There was a good attendance at the last meeting,and we hope to keep up the good work. We received one new application for membership.

DETROIT

Regular monthly meeting held on Nov. 4th, with all officers present and a good attendance.

Until the new building containing the Electro-plating equipment and laboratory at Cass Technical School is completed, meetings will be held in Room 1219 Dime Bank Building.

President Brockway described a small part used on Ford equipment which requires a copper deposit 1/32″ thick. This is done in a plating-barrel with acid copper solution.

Mr. Woodmansee, who is operating an automatic plating equipment, and using "Magic Fluid" solution, exhibited samples of work. He stated that when the work peeled, it was caused by the depletion of the hydrofluoric acid and predominance of the SO_4 liberated. This condition was instantly corrected by the addition of a suitable quantity of hydrofluoric acid. Be this as it may, Elmer is certainly getting results.

A general discussion on the best method of producing a dull black

finish on typewriter and adding machine parts, brought out several methods generally used. Several members will submit samples of this work done by various processes at our next meeting, and it is hoped to solve the question of how best to produce a durable dull black finish on steel non-wearing surface at least cost for large production output.

Mr. Kelly cited a case where great trouble is had by a manufacturer of bronze grille and architectural bronze products, due to surface discoloration, evidently caused by the metal mixture. As a nearly uniform color is desired, the question of how best to treat or clean the product was freely discussed. The Branch will appreciate any suggestions offered.

The old discussion of Nickel solutions, of which so many formulæ are in use, again brings up the question of what has become of Committee on Standardization started some time ago.

All members report a fair volume of business being done in the various establishments, and feel that the tide has turned and a speedy increase to full capacity is on the way.

Detroit Branch expresses regret at the death of Prof. Richards of Lehigh University. Prof. Richards will be remembered for his masterly article in September, 1920, on Farraday's Law at the Anode.

One application for membership was received.

CHICAGO

The regular meeting of Chicago Branch was held at the Hardware Club on Saturday evening, November 12th, 1921.

President George Burt occupied the chair and all regular officers were at their stations. There was a large attendance, and the meeting was very interesting. After the routine business, we received the report of the death of one of our most esteemed members, Mr. O. A. Norberg. A committee consisting of E. Lamoreaux and C. E. Thornton was appointed to draw up resolutions of condolence to be sent to the family of the deceased.

We had with us Mr. M. E. Louth and Mr. Humphries, Chemical Engineer, of Kokomo, Ind., who gave a very interesting talk on rust-proofing and the process of depositing cadmium; accompanied by a physical and chemical demonstration, and he agreed to send us a formal paper on the subject.

One application for membership was received.

CHICAGO QUESTION-BOX

Question No. 1—What is a good formula for a white gold solution?

Answer No. 1—ALL MEMBERS, Chicago refers this question to all members for solution. "THE REVIEW" would be glad to print all answers received; sit down and write yours at once and mail it to the Editor.

Question No. 2—What is the cause of blistering on plated die castings?

Answer No. 2—It was generally conceded that it was by the zinc in the alloy absorbing the deposit.

Question No. 3—What advantage has cobalt nickel solution over the ordinary nickel solution, and is it used cold or hot?

Answer No. 3—A higher current density can be used and more deposit can be secured in the same time; can be used hot or cold; however, cost is too high at present in proportion to results.

Question No. 4—How can fire coat be removed from gold-filled tubing; also from sterling silver tubing?

Answer No. 4—On sterling silver it was suggested that sulphuric acid pickle should be used, with the addition of a small amount of bichromate of potash; this would dissolve the cuprous oxide; use hot.

ALL MEMBERS, Chicago refers this question to all members in regard to the removal of fire coat from the gold-filled tubing, and we will publish all answers that are mailed to the Editor.

Question No. 5—What is the best way to make a rapid nickel solution?

Answer No. 5—Use combination of double and nickel salts with boracic acid and common salt.

Question No. 6—What is the most rapid copper deposit?

Answer No. 6—Use hot cyanide copper solution.

Question No. 7—What is the best nickel solution to use on electro-galvanized articles?

Answer No. 7—Use the regular nickel solution with the addition of a little citric acid.

Question No. 8—What is a good tank-lining?

Answer No. 8—The advice was given to use plastic cement, which does not crack in the corners; but to size the tanks first with asphaltum paint.

Why Not?

Wife—We should have a nurse for the baby, my dear.
Hubby—Nurse? What we need is a night watchman.

Anything to Get Her

Suburbanite (in employment office seeking a cook)—If you come out and cook for us you may use my garage and I will do all the repair work on the tires of your car, and even buy your gasoline.

OBITUARY.

Dr. Joseph William Richards

Dr. Joseph William Richards, head of the metallurgical department of Lehigh University, died at Bethlehem, Pennsylvania, October 12, 1921.

Dr. Richards had received many degrees from educational institutions; was the author of many books and papers on scientific subjects, and was a member of many scientific organizations, one of which was an honorary membership in the New York Branch of the American Electro-platers' Society.

O. A. Norberg

It is with profound regret that we are obliged to announce the death of O. A. Norberg, active member of Chicago Branch.

Mr. Norberg was taken with pleuro-pneumonia, and passed away, his funeral being held Thursday, November 3, 1921; burial being at Rosehill Cemetery, Chicago, Ill.

New York, October 15, 1921.

To the Family of our Esteemed Fellow-member, Dr. J. W. Richards, Bethlehem, Pa.

At the regular meeting of the New York Branch of the American Electro-platers' Society, held Friday, October 14th, 1921, we were informed of the passing to the Great Beyond of one of our most esteemed and respected fellow-members, DR. JOSEPH W. RICHARDS, a man widely known thruout the American Electro-platers' Society for his great interest and work in organizing the original body, and his valuable assistance in building up this Branch.

Therefore, it was decided to instruct the Secretary of this Branch to forward a letter of condolence to the family of Dr. Richards, expressing our sincere regret of the loss to our Society, and to extend the heartfelt sympathy of his fellow-members of the American Electro-platers' Society to his immediate family, and that a copy of the same be spread on the minutes of the meeting.

With expressions of sincere sympathy, we remain,

American Electro-platers' Society—New York Branch

J. A. STREMEL, President,

EMIL HAAS, Secretary.

NOTICE

Branch Secretaries

Do Not Make Reports of New Members or Applications to the Editor

Send them both to the Supreme Secretary

These instructions are not for the purpose of making the work of the Secretary or the Editor easy; but are required by provisions of our Constitution. Always send the Supreme Secretary the detachable coupon at the bottom of the application blank. You will get the best and quickest service for the new member if you follow these directions very carefully.

MEMBERS!

Report Changes of Address to the Branch Secretary, and also, if you desire, to the Editor

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Librarians, Branch Officers and Members!

"The Monthly Review"

CANNOT

Fill twenty-four pages without other material than the Branch Reports.

We have received only one paper since the Convention, and that came directly from a member.

GET BUSY!

NEW MEMBERS

Philadelphia

Robert C. Ledig.....2015 W. Ontario St., Philadelphia, Pa.

APPLICATIONS FOR MEMBERSHIP

Chicago

Welsford S. Traise.....

Philadelphia

Vincent Green.....2432 N. Park Ave., Philadelphia, Pa.
John A. Munning.....447 Bourse Bldg., Philadelphia, Pa.

St. Louis

S. J. Kelsey.....1000 So. Fifth St., Springfield, Ill.

CHANGE OF ADDRESS

Boston

F. W. Greenwood.....Hotel Majestic, Bowdoin Square, Boston, Mass.

Bridgeport

William Flaherty.....646 Beechwood Ave., Bridgeport, Conn.

Chicago

W. J. Keefe.....c/o General Delivery, Muskegon, Mich.
Edward Stepka.....6812 N. Clark St., Rogers Park Sta., Chicago, Ill.

Cleveland

W. C. Shaffer.....4900 Colonial Ave., Norfolk, Va.

Indianapolis

J. Walsh.....2428 Speedway Ave., Indianapolis, Ind.

Milwaukee

H. E. Armour.....1703 North Ave., Milwaukee, Wis.
E. Weiman.....553 Belleview Place, Milwaukee, Wis.

Rochester

E. E. Fitch, Sr.....250 Auburn Ave., Buffalo, N. Y.
Paul W. Geiger.....5651 Belmar Terrace, Philadelphia, Pa.
Thomas Jordan.....1017 Nedro Ave., Philadelphia, Pa.
Charles Puffer.....436 Munroe Ave., Rochester, N. Y.
R. K. Hutchings.....33 Fountain St., Rochester, N. Y.
Emil Troxler.....6415 Franklin Ave., Cleveland, Ohio

BRANCH DIRECTORY

BOSTON

Regular meetings are held second and fourth Thursdays of each month, at p. m., at the Wells Memorial Hall, 987 Washington St., Boston. Secretary, A. W Garrett, 37 Dorset St., Dorchester, Mass.

BRIDGEPORT

Meets third Friday of each month in its laboratory, 260 John St., Bridgeport, Conn. Secretary, L. J. Maraffi, 744 Hancock Ave., Bridgeport, Conn.

CHICAGO

Meets second Saturday of each month, at 8 p. m., at the Briggs House, Randolph and Wells Sts. Secretary, F. J. Hanlon, 2855 N. Richmond St., Chicago, Ill.

CINCINNATI

Meets on the first and third Friday of each month, at 1262 State Ave. Secretary, W. J. Husing, 729 McMakin Ave., Cincinnati, Ohio.

CLEVELAND

Meets last Saturday of each month at Hotel Winton. Secretary, B. F. McCormick, 2024 Wyandotte Ave., Lakewood, O.

CONNECTICUT VALLEY

Meets at Hartford, Conn. Secretary, G. E. Vibberts, 31 Crown St., Hartford, Conn.

DAYTON

Meets first Saturday of each month at the Y. M. C. A., Dayton, Ohio. Secretary, C. Van Derau, 61 Bish Ave. Dayton, Ohio.

DETROIT

Meets first Friday of each month at room 1219 Dime Bank Building at 8 p. m. Secretary, O. H. Phelps, 951 Clay Ave., Detroit, Mich.

GRAND RAPIDS

Meets on the second Wednesday of each month at the Vocational High School, 129 Bostwick Ave., NE. Secretary, J. Andrew Warner, 738 Fairview Ave., N. E., Grand Rapids, Mich.

INDIANAPOLIS

Meets the second Saturday of each month at Hotel Denison. Secretary, Louis Mertz, 1728 Union St., Indianapolis, Ind.

MILWAUKEE

Meets second and fourth Thursdays of each month at the West Side Bank Bldg. Secretary, R. Steuernagel, 1508 Concordia Ave., Milwaukee, Wis.

MONTREAL

Secretary. A. Geroux, 48 Craig West, Montreal, Quebec, Canada.

NEWARK

Meets first, third and fifth Fridays of each month at Forresters' Home, 20 Central Ave., Newark, N. J., at 8 p m Secretary, O. F. Carlson, 225 West Grand St., Rahway, N. J

NEW YORK

Meets second and fourth Fridays of each month at the Broadway Central Hotel Parlors, New York City. Secretary, E. Haas, 504 East 163rd St., New York, N. Y.

PHILADELPHIA

Meets first Friday of each month in the Harrison Laboratory Building, University of Pennsylvania, 34th and Spruce Sts. Secretary, P. Uhl, 2432 North 29th St., Philadelphia, Pa.

PITTSBURGH

Meets first Saturday of each month at 8 p. m., at United States Bureau of Mines Bldg., Forbes St. Secretary, S. E. Hedden, 227 Fifth St., Aspinwall, Pa.

PROVIDENCE-ATTLEBORO

Meets first and third Thursday of each month at 26 Custom House St., Room 16. Secretary, C. J. Poyton, 269 Ohio Ave., Providence, R. I.

READING

Secretary, C. H. Bingham, 127 Greenwich St., Reading, Pa. (New Secretary not yet elected.) Regular meeting is held on the second Tuesday of each month.

ROCHESTER

Meets every second and fourth Friday of each month, at Hotel Seneca. Secretary, E. E. Fitch, Jr., 607 Sawyer St., Rochester, N. Y.

SYRACUSE

Secretary, M. J. Crean, 109 Court St., Syracuse N. Y.

ST. LOUIS

Meets first Saturday of each month at Barr Branch Library, corner Jefferson a Lafayette Sts. Secretary, H. H. Williams, 4156 Botanical Ave., St. Louis, Mo.

TOLEDO

Meets first Thursday of each month at Toledo University Science Building, Electro-Platers' Room, corner Cherry and Page Sts. Secretary, H. L. Myers, 410 Palmer, Toledo, Ohio.

TORONTO

Meets second Thursday of each month at Occident Hall, Bathurst and Queen Sts. Secretary, C. Kemish, 671 Boston Ave., Toronto, Ontario, Canada.

WATERBURY

Secretary, Wm. Delage, 47 Prospect St., Waterbury, Conn.